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ABSTRACT

Cross-cultural sex differences in achievement and career motivation of 432 Iranian and U.S. high school and college students were obtained by a multiple level generalizability perspective. The independent variables were culture, sex, age, family socialization, academic self-concept, home self-concept, social self-concept, perceived community support, perceived discrimination, and risk-taking behavior. The multiple level cross-cultural generalizability analysis revealed that the major portions of dependent variable variance were accounted for by interaction terms. For achievement motivation, 78% of the variance was attributable to a culture x sex x age interaction. For career motivation, the majority of the variance (between 52% and 78%) was accounted for by interaction terms of sex x culture, sex x age, age x academic self-concept, and age x home self-concept. These results suggest that motivation is a function not only of personological and situational factors but of cultural differences. (Author)

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Cross-Cultural Sex Differences In Achievement And Career Motivation

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Cross-Cultural Sex Differences in Achievement and Career Motivation[1, 2]

Statement of Problem

Maehr (1974) has shown that the question of "What motivates persons to achieve?" can be answered in a number of ways, but that most of the past research on it can be classified in terms of two models. The first model considered motivation to be a stable personality trait which was consistent since its development in early learning experiences (McClelland, 1961, 1971). The second model conceptualizes achievement motivation to be caused by the immediate situational and societal conditions with which an individual has contact (Atkinson & Raynor, 1974; Sewell, Hauser & Featherman, 1976). However, Maehr (1976) argues that motivation is also a function of an individual's cultural background. Thus, Maehr (1976) suggests that models not incorporating a cultural component into their theories will generate ethnocentric research concerning achievement motivation. Fyans (1979) extended the Maehr (1976) suggestion to the general area of all cross-cultural research. In particular, Fyans (1979) has postulated that all cross-cultural research should be conducted from a multiple-level framework which would simultaneously examine the influence of cultural components as well as personological, situational, and subcultural cohorts (e.g., sex, SES, age). More importantly, this multiple level framework permits the investigation of the effects of the interactions between variables from any of these levels (cf. Fyans, 1979).

This multiple level model follows a sequential decision process (cf. Fyans, 1979) designed to empirically determine the generalizability (or specificity) of constructs and relationships across cultures, subcultural

cohort, or individual differences factors. Simply put, for each dependent variable it simultaneously tests the hypothesis that human behavior is cross-culturally generalizable against multiple alternative hypothesis that it is constructed.

Farmer (Note 1) in line with the Fyans proposal developed a multiple level model to investigate the constructs of achievement and career motivation. Farmer feels that the lesser contribution of women to the sciences, humanities, and arts can be linked to their achievement and career motivation. Furthermore, Farmer (Note 1) feels that women's achievement and career motivation can be defined by ten variables. Farmer has classified these ten variables in terms of a Fyans (1979) multiple level framework as follows:

Early environment and learning experiences

Culture

Family Socialization

Personological-Individual Differences

Sex

Age

Academic Self-concept

Home Self-concept

Social Self-concept

Situational Contextual

Perceived Community Support

Perceived Discrimination in Community/Work

Risk-taking Behavior

Interactions

Interactions of all of the above

The purpose of this paper is to present the results of this multiple level cross-cultural study which investigated the influence of these ten variables upon the achievement and career motivation of females and males in Iran and the U.S. at two different age levels (high school and college). The techniques of multiple level Bayesian partially-hierarchical generalizability analysis (Fyans, 1979) were applied to indicate which of the ten variables or their interactions accounted for achievement and career motivation and thus over which variables could one generalize cross-cultural statements and conclusions. Of great interest in this regard would be the presence or absence of sex differences in motivation especially with such diverse cultures as Iran and the U.S. represented in the analysis.

Method

Subjects

A total of 432 subjects participated in this study which was comprised of 92 Iranian and 340 U.S. students. For the U.S. sample 251 were female and 80 were male. For the Iranian sample 46 were female and 46 were male students. The samples were drawn from one high school and one college in each culture. The U.S. schools were selected on the basis of their representativeness of U.S. students since the schools served a representative distribution of lower, middle, and upper SES families. Several Iranian colleagues agreed upon exactly which schools should be selected in Iran. It is important to emphasize that in both cultures, none of the students had been used in previous research or experiments thus assuring a degree of ecological validity (Brislin, Lonner, Thorndike, 1974; Triandis, 1972).

Measures

Dependent variables. Achievement motivation was measured using verbal leads developed by Horner (1968) from Atkinson's measure (1958) to elicit imaginative stories from the subjects. With verbal leads, the problem of finding pictures with similar cue value for both sexes is largely avoided. Also, possible influence of other factors such as age, dress, sex of persons in the pictures is eliminated. Verbal leads have been used usccessfully in previous achievement motivation research by Winterbottom (1953) and Atkinson and Litwin (1960). The interjudge reliability (Horner, 1968) was .93.

Career motivation was measured using Holland's (1973) and Roe's (1959) procedure for scoring the occupational daydreams of the subjects. Holland (1973) has shown that the reliability for this measure ranges from .67 to .71 and its predictive validity is .44.

Independent variables. The self-concept independent variables, academic, home, and social, were measured by subsets of the Coopersmith Inventory (Coopersmith, 1975). These scales measure the evaluation of self in relation to academic, familial, and social environments. The alpha factor analysis revealed reliability for each subtest ranged from .65 to .82.

The early socialization instrument is designed to measure an individual's perception of the early learning experiences with parents and siblings. In particular, the factorial dimensions comprising the instrument assess (1) encouragement of independence; (2) quality of home environment interaction; and (3) value placed upon achievement by parents, sisters and brothers. Only those items which significantly discriminated between these individuals in a pilot group with high or low achievement motivation were included in the measure. The reliability of this measure was .86.

Perceived discrimination is a survey of the subject's perceptions concerning beliefs found to inhibit career motivation (Birk, et al., Note 2). These beliefs concern employer and community discrimination and were initially collected by the U.S. Women's Bureau (1974). The reliability is .93.

Perceived community support is an instrument designed to measure the individual's perception of the support in their environment for their achievement and career aspirations. In particular, the factors of availability of child care facilities, home making responsibilities and expectations of significant other members of the community are tapped in this instrument. This measure has a reliability of .38.

The measurement of risk-taking was conducted by an instrument adapted by Kogan and Dorros (Note 3) of the earlier Kogan and Wallach (1959), Choice Dilemmna Questionnaire. The items used in this study were balanced for work/school related risks and male/female actions. This revised form has a reliability of .55.

To assure the "phenomenal equivalence"[3] (Straus, 1969, Irvine & Carroll, 1979) and emic assessment with each of the above measures in both culture, the measures were adapted and back-translated by three Iranian graduate students. In addition to the above variables, information was also collected as to the subject's sex, age (high school or college) and culture.

Procedure

The administration of the measures was done in group settings and completely randomized to control for order effects. Thus, approximately every 13 subjects had a different order of presentation of the measures. The data was collected in Iran by Iranian teachers and professors.

In both cultures, the students were told there were no right or wrong answers, that the results would have no effect upon their academic grades or school records, and to ask any questions they might have. The measures were coded with a sequence of numbers so the subjects did not have to write their names on them.

Analyses

The techniques followed were adopted from the Bayesian generalizability framework developed for multiple level cross-cultural psychological research by Fyans (1979). Due to the Bayesian and generalizability weighting procedures which were implemented, the problem of unequal cell sizes was averted. For each dependent variable (achievement motivation and career motivation) the variance components for all the independent variables and their interactions were transformed into generalizability coefficients (Cronbach, et al., 1972; Golding, 1975). Obtaining a large generalizability coefficient for a particular independent variable would represent high within-level correlations among the motivation scores for that independent variable. Thus, obtaining a large generalizability coefficient for the independent variable of sex would mean that within each sex group (females or males) there was a high degree of similarity of motivation scores, but that there were large differences in motivation scores across sexes. Thus, all discussions or statements concerning motivation would have to be made specific to an individual's sex. This high generalizability of motivation behavior across all other non-sex factors included in the study (age levels, cultures, academic self-concept, etc.). Likewise, a high generalizability coefficient for "culture" would indicate a high degree of generalizability of motivation scores across the other non-culture factors included in the study (age levels, sex, academic self-concept, etc.). Thus, a high generalizability coefficient for "culture" would imply

that all statements concerning motivation would have to be made specific to each culture.

However, a low generalizability coefficient for a particular independent variable would indicate a lack of specificity in motivation scores for that particular independent variable. This is because a low generalizability coefficient would express the lack of motivation score variance accounted for by that particular independent variable of interest (Fyans & Maehr, 1979)

Results

Achievement Motivation

Table 1 presents the generalizability coefficients of the independent variables for the dependent variable of achievement motivation. The results presented in Table 1 indicate that the major portion of achievement motivation variance is attributable to an interaction of cultural factors, sex differences, and age factors. None of the "main effects" for the background, personological, or situational/contextual variables accounted for substantial amounts of achievement variance when compared to the generalizability coefficient for the culture x age x sex interaction.

Insert Table 1 about here

This prevalent and strong three way interaction agrues for a high degree of specificity in statements concerning achievement motivation. The nature of this interaction is defined by the means presented in Table 2. The means presented in Table 2 indicate that cross-cultural sex differences in achievement behavior show that high school Iranian males express much more achievement motivation than high school females and males in the U.S. High school Iranian

females also have a higher achievement motivation than U.S. high school females, but this pattern changes in college. College females in the U.S. express much more achievement motivation than Iranian college females. Similarly, the U.S. college females appear to have approximately the same level of achievement motivation as Iranian college males. However, college males from the U.S. have higher achievement motivation than Iranian college males. Also, it appears that for females and males in the U.S. there are also higher levels of achievement motivation in college than high school but the reverse pattern is true for Iranian females and males.

Insert Table 2 about here

Career Motivation

Table 3 presents the generalizability coefficients of the independent variables for the dependent variable of career motivation. The results reported in Table 3 for concerning the dependent variable of career motivation follow a similar pattern as those with achievement motivation. The results of the generalizability analysis showed only a minimal amount of variance were accounted for by the main effects of the independent variables. Most of the career motivation variance was attributable to interaction terms from all levels of this multiple level design. The nature of these interactions can be given as follows.

Insert Table 3 about here

Table 4 presents the means for the sex x age interaction. The means in Table 4 indicate that there is a greater discrepancy between career motivation scores of females and males during college than high school. This finding is generalizable across both Iran and the U.S. and across all levels of the other independent variables.

Table 5 displays the means for the sex x culture interaction. The results in Table 5 show that there is a much larger distance between female and male career motivation scores in Iran than in the U.S. Likewise, there is not a large sex difference in career motivation in the U.S. It is interesting also to note that U.S. females have higher career motivation than Iranian females.

Insert Table 5 about here

The means for the age x academic self-concept interaction are given in Table 6. The means on career motivation shown in Table 6 indicate that there is a greater discrepancy between the career motivation scores between individuals with high academic self-concepts and low self-concepts in college than in high school. Thus, in college, the level of academic self-concept becomes a more salient discriminating independent variable in terms of career motivation. This result is generalizable across both the U.S. and Iran females and males.

Insert Table 6 about here

The career motivation means for the age x home self-concept interaction are presented in Table 7. The means presented in Table 7 show that there is no large difference between the career motivation scores of high school students with different levels of home self-concept. However, in college, a large difference does appear between students with high and low home self-concept. Apparently, in college, the variable of home self-concept becomes more important in determining differences in career motivation. This finding is generalizable across both cultures and sexes.

Insert Table 7 about here

Discussion

The present cross-cultural analysis of sex differences in motivational behavior followed the proposed multiple level framework (Fyans, 1979) for defining cross-cultural behavior. The need for the inclusion of the component of culture as suggested by Maehr (1974, 1976) received substantial support from these interactive results. For the dependent variable of achievement motivation it was found, that in contrast to previous non-multiple level models, that most of the achievement motivation variance was attributable to an interaction term. This was the culture x sex x age interaction with accounted for 78% of the achievement variance. In terms of a path framework (cf. Maehr, 1974), this interaction effect can be diagrammed as follows:[4]

Thus, all statements concerning achievement motivation must be made specific to this particular pattern of culture, sex and age effects. These results lend strong support to Fyans (1979) conceptualization of achievement as a complex,, non-simplistic process with contributions from several different types and levels of variables. Achievement motivation is thus not only a function of personality (McClelland, 1961), situation (Atkinson & Raynor, 1974), and culture (Maehr, 1976) but an interaction function of their components. Further, research must determine when and how specific individual difference factors (such as attributions) or cohort factors (SES, etc.) interact to effect achievement motivation. The results from a large scale sociocultural investigation now in progress (cf. Fyans, Note 4) may shed light upon this process.

The results of the cross-cultural analysis on career motivation even more clearly follow the interactionist framework than those of achievement motivation. Little, if any, career motivation variance is accounted for by the main effects of the independent variables. The terms which do account for the major portions of career motivation variance are the sex x age, sex x culture, age x academic self-concept, and age x home self-concept interactions. While it is necessary to conduct further cross-cultural sex differences studies to determine the stability of these results, these results have important ramifications in terms of any attempt to facilitate high levels of career striving of females. It appears that any ameliorative steps would have to be framed in terms of the particular pattern of relationships among the independent variables drawn from different levels of multiple level model of career motivation. Training programs, self-awareness-raising, or even career counseling would have to be framed or made relevant to each female's age and cultural background. Thus, one program to increase women's contribution to the sciences, arts, and humanities will not work for all women, everywhere.

Footnotes

[1]Requests for reprints should be sent to Leslie J. Fyans, Jr., Department of Planning and Research, Illinois State Board of Education, 100 North First Street, Springfield, Illinois 62702

[2]The authors are indebted to the Midwest University Consortium for International Affairs for their participation and facilitation of this cross-cultural project. Likewise the advice of Harry Triandis, Maurice Tatsuoka, Robert Linn, and Charles Lewis of the University of Illinois are also gratefully acknowledged.

[3]While the cross-cultural "phenomenal equivalence" of the nine measures was insured by their emic measurement, it was necessary, as demonstrated by Irvine and Carroll (1979), Irvine (1973), and Irvine and Sanders (1972) to show "metric equivalence." Following the criteria of Irvine and Sanders (1972) and Brislin, Lonner, and Thorndike (1973), the cross-cultural construct validity (Cronbach & Drenth, 1972) was demonstrated by factor analytic methodology.

[4]The curved line indicates that the effect is an interactive one and not a main effect.

[5]Only those interactions which havenon-zero generalizability coefficients are reported.

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Table 1

Generalizability Coefficients for the Dependent Variable of Achievement Motivation

Independent Variables	Generalizability Coefficients
Background Variables	
Culture	$\rho^2 = .17$
Family Socialization	$\rho^2 = .00$
Personological Variables	
Sex	$\rho^2 = .39$
Age	$\rho^2 = .34$
Academic Self-concept	$\rho^2 = .00$
Home Self-concept	$\rho^2 = .37$
Social Self-concept	$\rho^2 = .00$
Situational/Contextual Variables	
Perceived Community Support	$\rho^2 = .00$
Perceived Discrimination	$\rho^2 = .30$
Risk-taking	$\rho^2 = .31$
Interactions [5]	
Culture x sex x Age	$\rho^2 = .78$

Table 2

Means on Achievement Motivation for the Culture X Age X Sex Interaction

	Culture			
	Iran		United States	
Sex	High School	College	High School	College
Female	1.4	.28	.0	1.1
Male	6.5	1.18	.6	2.2

Table 3

Generalizability Coefficients for the Dependent Variable of Career Motivation

Independent Variable	Generalizability Coefficient
Background Variables	
Culture	$\rho^2 = .18$
Family Socialization	$\rho^2 = .05$
Personological Variables	
Sex	$\rho^2 = .21$
Age	$\rho^2 = .00$
Academic Self-concept	$\rho^2 = .00$
Home Self-concept	$\rho^2 = .00$
Social Self-concept	$\rho^2 = .00$
Situational/Contextual Variables	
Perceived Community Support	$\rho^2 = .02$
Perceived Discrimination	$\rho^2 = .00$
Risk-taking	$\rho^2 = .02$
Interactions[5]	
Sex x Age	$\rho^2 = .73$
Sex x Culture	$\rho^2 = .53$
Sex x Academic Self-concept	$\rho^2 = .67$
Age x Home Self-concept	$\rho^2 = .78$

Table 4

Means on Career Motivation for the
Age x Sex Interaction

	Age	
Sex	High School	College
Female	4.59	4.40
Male	4.9	4.83

Table 5

Means on Career Motivation for the
Culture x Sex Interaction

	Culture	
Sex	Iran	United States
Female	4.08	4.91
Male	4.73	5.03

Table 6
Means on Career Motivation for the
Age x Academic Self-Concept Interaction

	Levels of Academic Self-Concept	
Age	Low	High
High School	4.49	4.53
College	4.66	5.03

Table 7

Means on Career Motivation for the
Age x Home Self-Concept Interaction

	Levels of Home Self-Concept	
	Low	High
Age		
High School	4.49	4.49
College	4.55	5.16